

himself satisfied with the results obtained at the Argentine Observatory; the photographs of the moon at full and in the last quarter he thinks may be favourably compared with any obtained elsewhere which he had seen. He refers to "the very beautiful picture of the moon" made with the 4-foot reflector at Melbourne, which was also exhibited at Philadelphia, and adds, he is not sure, if he had seen this elegant photograph before placing his own on exhibition, he would have ventured to compete. Dr. Gould remarks that much of the credit of the stellar photographs is due to the pure air of Cordoba, which is incredibly transparent on the not very numerous occasions when the sky is really clear. The impressions on glass exhibited were of six different clusters, the plate of the cluster X Carinæ containing two images each of 185 stars, and that of  $\eta$  Argus containing 180, and many of the stars as faint as the ninth magnitude. Measurable photographs of not less than eighty-four celestial objects have been secured, of which nineteen are double stars and the remainder clusters. The planets Jupiter, Mars, and Saturn, have also been photographed "with sufficient distinctness to show clearly the details of light and colour on the surfaces of the two former, and the existence of the ring in the latter," but the images have not been sufficiently sharp to allow of successful photographic enlargement.

**VARIABLE STARS.**—Herr Palisa in *Ast. Nach.*, No. 2,174, mentions his having remarked a new variable star, the position of which for 1877.0 is in R.A. 16h. 4m. 35s., N.P.D. 109° 48' 9". It does not occur on Chacornac's chart No. 49; it was 10m. on May 26, 1876, and on July 31 and August 3 of last year, whereas on May 17, 1877, no trace of it was perceptible. The period is therefore no doubt comparatively short.

The star L. 36606 = B.A.C. 6641 appears to vary from 6.5m. to 9m. On October 17, 1852, Argelander estimated it of the former magnitude, Lalande and Piazzi call it an eighth, while about midsummer, 1851, it was little, if anything, over the ninth magnitude.

L. 26211 is probably variable from 6m. to 8m., and L. 27307 from 7m. to 9m., and it is not unlikely that further observations will place  $\beta^2$  Geminorum on the list of variables; it has been rated at a fifth magnitude and as low as 8½.

**THE MINOR PLANET EVA.**—A planet of the eleventh magnitude, observed by Herr Palisa at Pola on December 29, is mentioned in the *Bulletin International* of January 3, as possibly No. 180, but according to a communication from Herr Knorre, of Berlin, as probably identical with No. 164, detected by M. Paul Henry at Paris on July 12, 1876, which received the name *Eva*. The observations of 1876 extended over an interval of little more than a fortnight, and the elements which have been calculated by Mr. Winslow Upton and M. Bossert are therefore liable to uncertainty, but if we adopt Mr. Upton's orbit and compute for the time of the Pola observation, the place is found to be about a degree only from that observed, and it is therefore probable that No. 180 has yet to be discovered.

#### THOMAS VERNON WOLLASTON

THE very limited band of scientific English entomologists has just suffered a great loss by the sudden death, on the 4th instant, at his residence, 1, Barnepark Terrace, Teignmouth, of Thomas Vernon Wollaston—a name dear to science, and of which he well upheld the reputation. Accurate, elaborate, and precise *ad punctum*, and naturally of a minutely critical habit, he nevertheless persistently acted upon a broad conception of the science to which he was devoted; and taking advantage of the periodical banishments to a warmer climate imposed upon him in early manhood by pulmonary weakness, set himself the task of thoroughly investigating the coleopterous fauna of the Madeiras, Salvages, and Cape

de Verdes, and finally of St. Helena. His philosophical deductions from the vast mass of well-sifted evidence obtained (chiefly by his own bodily toil, though he was always in a more or less debilitated state of health) referring to these isolated groups, may be summed up as corroborating the former existence of that submerged Atlantis whereon geologists differ. From the exhaustive care with which his material was obtained, it seems highly unlikely that his premises were insufficient; and his discussion of the subject so far resembles Mr. Darwin's method that it supplies the objections likely to be raised, and itself practically exhausts criticism by minuteness of observation.

To students of British entomology, Mr. Wollaston is best known by his early papers in the *Zoologist* and Stainton's *Entomologists' Annual and Weekly Intelligence*, and by his revision of *Atomaria* in *Trans. Ent. Soc.*, 1877. His first scientific contribution was in the *Zoologist*, vol. i. (1843), on *Coleoptera* at Launceston, when a student at Jesus College, Cambridge (where, with the late J. F. Dawson and Hamlet Clark, he imbibed from Dr. Babington a taste for natural science), and his last, a paper in the *Annals and Magazine of Natural History*, on a weevil destructive to the banana in Madeira, was received from him by the writer almost simultaneously with the news of his death. He published many descriptive and analytical papers, almost exclusively on *Coleoptera*, in the above-named publications, the *Journal of Entomology* and the *Entomologists' Monthly Magazine*; but his *magnum opus* is the well-known "*Insecta Maderensia*," published in 1854, the results of his sojourns in Madeira, to which he first went in 1847. This, from its amount of novelty and classical treatment, at once established his reputation.

His collection, increased by another visit in 1855, having been purchased by the trustees of the British Museum, he prepared a more complete account, which was published as a museum "Catalogue" in 1857. Subsequent visits in 1858 and 1859 resulted in a description of the coleopterous fauna of the Canaries, also published as a museum "Catalogue" in 1864. The acquisition of fresh material compelled him in the next year to write his "*Coleoptera Atlantidum*," an arduous critical work of nearly 700 pages, followed in 1867 by the "*Coleoptera Hesperidum*," a valuable descriptive account of the species of the Cape Verde Archipelago, visited in 1866. His last contribution to geographical entomology, "*Coleoptera Sanctæ-Helenæ*," 1877, contains a multiplicity of unexpected developments (especially after the supposed exhaustion of the productions of the island in Mr. Melliss's work), and shows that St. Helena is the home of a special family, *Cossonidæ*, to which Mr. Wollaston had always devoted attention, having himself described no less than 255 new species in it, as against 67 described by all other naturalists, living or dead.

Of his other works, it may suffice to mention one on the "*Variation of Species*," published in 1856, and another, "*Testacea Atlantica*," that will, alas, be posthumous (though complete), being a descriptive account of the land-shells of his favourite hunting-ground.

The amount of work in these publications and in others not referred to, is astonishing, especially to those who know the extreme precision (both in manipulation and writing) and the weak physical condition of the author. Mr. Wollaston became a Fellow of the Linnean Society in 1847, and was also a Fellow of the Cambridge Philosophical Society, but, beyond his university degree, sought no other honorary distinction. He was, we believe, in his fifty-seventh year at the time of his death. E. C. R.

#### NOTES

WE may remind our readers that on this day, a century ago, one of the great reformers of science—perhaps the most celebrated naturalist of all times—Linné, breathed his last. His

name is too familiar to our readers to necessitate any biographical remarks on our part: His countrymen will doubtless commemorate the day in a fitting manner, and the sanctum at Upsala University, Linné's room, which is still preserved in its original state, will, we are sure, be visited by many a scientific pilgrim.

AT the last general meeting of the Royal Academy of Sciences of Brussels, the five years' prize for natural sciences was awarded to Prof. van Beneder, of Liège, the son of the celebrated zoologist of Louvain.

THE Emperor of Austria has recently awarded the large gold medal "for art and science" to the well-known African traveller, Dr. Oscar Lenz.

THE African traveller, Herr Gerhard Rohlfs, is now organising an expedition for the investigation of the eastern part of the Great Sahara. He will be accompanied by a number of scientific men, amongst others by Prof. Zittel, of Munich. Tripoli will be the head-quarters of the expedition, and its first efforts will be the exploration of the mysterious oases, Wajanga and Kufara, in the south of Anjila, which have never been visited by any European travellers.

AT Frankfort-on-the-Main a new society has been formed with the sole object of watching over the interests of chemical industry.

AMONGST the students of Strassburg University the idea has ripened to erect a monument in memory of Goethe as the most eminent representative of German culture, and as the ideal of a German student. The monument is to stand in front of the new University Building, and is to represent the poet as he appeared at the time of his sojourn at Strassburg, in the prime of youth and strength, and in the costume of that period. Most of the professors of the University regard the idea favourably, and the inhabitants of the city are confidently expected to do the same.

ANOTHER Pompeii has been accidentally discovered in the neighbourhood of Mount Gargano, near Manfredonia. There were found an ancient temple of Diana, a magnificent portico about twenty metres long, with an underground necropolis of great extent. A large number of important inscriptions has already been forwarded to, and exhibited by, the National Museum of Naples. The discovered city is the ancient Sipuntum, near Arpinum, mentioned by Strabo and Titus Livius. The houses are nearly twenty feet beneath the cultivated soil. This town was at the time ingulfed in consequence of a terrible earthquake. The Italian Government has ordered researches to be made on a large scale.

WE are glad to learn that a telegram received at Rome from Cairo announces that the Marquess Antinori had arrived at Zeyla, from which he intended to start at once for Italy. It is not known, however, as yet whether he is alone or accompanied by other members of his expedition.

MR. STANLEY has left Alexandria for England by Brindisi. He is expected to visit Rome, Marseilles, and Paris, on his way home, and speak on his work to the geographical societies of these cities. The Khedive invested Mr. Stanley with the order of the Grand Cross of the Medjidie, accompanied by another order of the next grade, thus conferring upon Mr. Stanley the title of Grand Officer of the Order of the Medjidie.

M. GAUTHIER VILLARS has published the new issue of the *Annuaire* of the Bureau des Longitudes of France, which contains a large number of geographical data. It is the first time that such a quantity of interesting numerical data has been collected in this small volume. In addition the volume contains two essays, one by Dr. Janssen on Solar Photography, and the other on Cosmical Meteorology by M. Faye. The latter denies any connection to exist between either solar spots, magnetic

disturbances, or the motions of Jupiter, and the positions of the moon and variations of weather.

THE death is announced of General La Marmora, who always took a lively interest in the progress of science in Italy, and often gave his substantial aid to the establishment of practical scientific schools.

SIGNOR MENGONI, one of the greatest architects of Italy, builder of the well-known Vittorio-Emanuele Gallery at Milan, has fallen from the great arch of that building, whilst giving directions for the completion of this his life-work; he died instantly.

MESSRS. MACMILLAN have in preparation the first part of a "Course of Instruction in Zootomy," by Prof. Huxley, assisted by Mr. T. J. Parker. This part will consist of directions for the dissection of readily-obtainable examples selected from each of the classes of the vertebrata, accompanied by full descriptions of the parts displayed.

WE notice the appearance of a very interesting Russian work by M. Nemirovich-Danchenko, entitled "The Land of Cold," being a description of the author's travels in the White Sea to the coast of Russian Lapponia, to Kandalaksk Bay, Novaya Zemlya, and Waigatz Island. The work has no pretensions to be scientific, but it is full of interesting and useful information on the inhabitants of the regions visited. The able descriptions are chiefly devoted to the life of the walrus- and seal-hunters, but it contains, besides lively pictures of such life, abundant statistical data as to the state of those industries, and descriptions of the varied manners in which they are carried on in different parts of Northern Russia. An important part of the work is devoted to descriptions of Samoyedes, Korels, Zyrians, Yuraks, Chukchees, Kamchadaliens, Lapps, and Ural Cossacks, based on the author's own notes and other recent information. The work, extending to 520 pages, is illustrated with twenty-five full-page illustrations, and is written in the attractive style characteristic of the author, who is well known in Russia.

THE anniversary meeting of the Vienna Geographical Society was held on December 18. The Society now numbers seventy honorary, 132 corresponding, and 641 ordinary members. The Austrian Minister for Public Instruction has granted a yearly subsidy of 1,000 florins to the Society for the period of three years, and this sum, as well as other donations it has received, have enabled the council to enlarge the Society's library, which during the past year was increased by 234 new works and nineteen geographical views, as well as to facilitate materially the publication of scientific works, and to support geographical exploration. The receipts of the Society during 1877 were 7,332 florins, the expenses 7,110 florins. The President, in his report, announced that the scientific investigations made in Central Africa by Dr. Oscar Lenz and Lieut. Lux, will soon be published, and that the Austrian traveller, Dr. Emil Hollub, after a sojourn of nearly three years in South Africa, will shortly return to Austria.

PHYLLOXERA, that pernicious enemy of the vine, which hitherto had mainly restricted its devastations to the wine-growing districts of France and Switzerland, seems lately to be gaining ground in Germany as well. It is announced that it has appeared in a vineyard at Rauschwitz, near Glogau, as well as in a viticultural establishment at Plantières, near Metz. In the former case the vines had been purchased last spring from one of the numerous horticulturists of Erfurt. The necessary measures are being taken to prevent the spreading of the plague. In France phylloxera seems also on the increase; at Saint Medard and other places of the Gers Department the vines are covered by such masses of the insect that the latter can easily be seen by the naked eye, which is generally not an easy matter.

A NEW weekly serial for horticulturists has been published since January 1 at Berlin under the title *Der deutsche Garten*.



THE contract made between Alsace, Baden and Switzerland, for the protection of the fisheries in the Rhine and its tributaries, has recently come into force. The states mentioned agree to issue similar laws with regard to fisheries, and to further, in every possible way, the maintenance and increase of the valuable species of fish both in the Rhine and in the Lake of Constance. The contract has been signed for the space of ten years, and the participation of the other Rhenish states is much desired.

WE have received another volume of Brehm's "Thierleben," being the third volume on the mammals.

THE observations of shooting stars made in August last at the Royal Observatory of Brussels by M. Houzeau, and at Menin, showed according to a note in the *Bulletin* of the Belgian Academy (Nos. 9 and 10), that the number of these bodies was this year rather small, not exceeding seven per hour on August 9, and sixteen on August 11; on August 10 the sky was covered with clouds.

IN the last session of the Naturforschende Gesellschaft of Görlitz the President, Dr. Peck, made an interesting communication on a newly-discovered enemy of the carp. It appears that large numbers of the spawn of this fish are attacked by the Water-bug (*Ranatra linearis*), which fastens itself firmly on the back of its prey with its forefeet, and by means of its sharply-pointed trunk, sucks out the small amount of blood in the young organism. A series of experiments conducted in some large establishments for fish culture show that the only method of fighting this new foe is to drain the ponds dry and restock them with fish.

A CONSIGNMENT of soles and turbot was sent from the Southport Aquarium on Thursday last to America in charge of Mr. Mather, agent to Prof. Baird, United States Commissioner of Fish and Fisheries. If they arrive safely they are destined to be turned adrift in the Bay of Massachusetts. It appears that while so many members of the *Pleuronectida* are common enough on the American coast, soles and turbot are entirely unknown. Hence a journey to England was arranged by Prof. Baird to see if these desirable fish could not be safely transmitted across the Atlantic.

THE members of the Scientific Club will learn with regret that Mr. Logan Lobley, F.G.S., has tendered his resignation of the office of secretary to the Committee of the Club.

WE regret to record the death, on December 22, of Mr. James Whaiman Bosanquet, F.R.A.S., M.R.A.S., &c., who was distinguished by his researches in biblical chronology and Assyrian history. He helped forward in many ways the investigations by Mr. George Smith, by Boscawen, and others, which have resulted in the recent famous discoveries. His valuable suggestions with reference to certain solar eclipses as bearing on the subject have frequently been acknowledged by the Astronomer-Royal and by Mr. Hind.

THE death of M. François Vincent Raspail, one of the deputies for Marseilles, is announced. The deceased deputy, who was born in 1794, achieved scientific distinction early in life, and for many years past has held a high reputation on account of his chemical researches. Notwithstanding these scientific pursuits, M. Raspail throughout his life took an ardent and active part in political affairs.

*Vanity Fair* is informed that the Khedive has granted to a Dutch Company the right of draining Lake Marcotis, and utilising the land reclaimed. Its area is about 75,000 acres, and the company has bound itself to hand over to the Viceroy a certain proportion of the crops raised.

WE have received the first number of the *Revue Internationale des Sciences*, which we recently announced as about to appear.

There are two original papers, one by M. Balbiani, on "The Importance and Role of Embryology," and the other by Prof. von Nägeli, on "The Lower Fungi and the Decompositions which they determine." The rest of the number is mainly occupied with reports of societies.

THE *Gardener's Chronicle* learns with much pleasure that Mr. Benthall has finished the "Flora Australiensis," and that the seventh and last volume of this useful work will shortly appear. The first volume was published in 1863, so that the work has proceeded at the rate of one volume every two years. Not a very rapid rate, it is true; but still it compares favourably with the pace of other publications of the same kind. Mr. Benthall has had the advantage of Baron von Mueller's co-operation in this great work.

A DANISH agricultural journal recommends to those of its readers who wish to provide themselves every winter with a sufficient supply of ice to last during the whole of the summer the following simple means of increasing the thickness of ice during mild winters:—Long and intense cold is necessary to produce a coating of ice of more than two or three inches' thickness upon a surface of water of any considerable extent. But if a hole is made in the ice and the surface from time to time covered with a shallow layer of water, even moderately cold weather will suffice to freeze this water, and by repeating the experiment ice of ten inches or a foot in thickness is obtained without much difficulty. The Danish journal therefore proposes the use of portable pumps to be placed into the ice-holes for the purpose described.

THE apparatus used by M. Cailletet for the liquefaction of the gases was constructed by M. Ducretet, the philosophical instrument maker, and was put into operation in the laboratory of the Paris Normal School during last week, where it has been visited by a number of scientific men.

TWO shocks of earthquake were felt at Beachburg, Renfrew co., Ontario, on the morning of December 18 last, the first being between the hours of one and two, the last between five and six o'clock. The latter was so severe as to shake the houses and arouse the inmates from their beds. Beachburg is situated in the same district in the Ottawa Valley in which the earthquake of November 4 was felt most severely.

THOSE who have visited that charming watering-place, Tenby, in South Wales, will know how exceptionally rich the locality is in fossils, sea-shells, and especially in bone caves, some of which contained human remains and stone implements. Mr. Smith of Gurfreston, who has just died, is celebrated for the researches he made in the limestone caves and barrows of the neighbourhood, and his collection of bones, implements, urns, &c., is most extensive and interesting, and, on the authority of Prof. Rolleston, one of the most complete ever got together by a single individual. Through the liberality of Mr. Chas. Allen and others, the whole of the money for the purchase of this collection is forthcoming, but only on condition that a suitable building shall be provided to hold it. At its last meeting the British Association made a money grant for the further examination of the Tenby bone caves, so that it is of the utmost importance to science that a good local museum should be established to prevent these most valuable specimens being scattered all over the country. Those of our readers who really wish practically to help in promoting the cause of local museums have now an opportunity of doing so by forwarding subscriptions to Charles Allen, Esq., 10, Norton Tenby, South Wales. At the same time the people of Tenby and of Pembrokeshire generally will surely have public spirit enough and a sufficiently clear perception of their own interest not to let this fine collection slip through their hands.

MR. DENIS D. REDMOND writes from Dublin in reference to Dr. Röntgen's telephone alarm, calling attention to one which he has found very effectual. He simply sends the current of an ordinary magneto-electric machine through the instrument, which produces a loud hum that is distinctly heard many yards away.

THE last number of the *Isvestia* of the Russian Geographical Society contains three letters from M. Potanin from Khobdo and Ula-sutai, which, though written in January, March, and July, reached the society only in October. The winter in Khobdo was very cold; the thermometer stood in January as low as  $-27^{\circ}$  Cels. at noon, and even  $-37^{\circ}$  at seven o'clock in the morning; but the western gales brought a much warmer temperature, those of October 15, November 24, and December 24, having been the heaviest, and the last causing a rise of temperature from  $-19^{\circ}8$  to  $-0^{\circ}4$  Cels. There was little snow, so that the birds could easily find their food, and M. Potanin has noticed no less than fifty species (the insectivorous *Poocoes hendersonii* was among them), which wintered at Khobdo. In March M. Potanin started for Hami. He crossed the eastern part of the Altai Mountains, the Altain Naru, and soon reached the Gobi Steppe, which takes two days to cross, one night having to be passed without food for the horses and without water. On the southern frontier of the Steppe he was at the Chinese town Santau. Thence he crossed the Mechin-ola Chain, which runs parallel to the Tian-Shan, and entered the Bökul depression. Hami was reached on May 23, and the travellers, who were kindly received by the authorities, stayed for some time. They returned thence to Ulassutai, *i.e.*, after having crossed the chain mentioned above, turned east, following a series of Sart's settlements at the northern foot of the eastern part of Tian Shan, or Karlyk-Tagli, covered with perpetual snow. At Nom-Tologoy settlement they turned north, crossed for a second time the Gobi Steppe, and afterwards the Altai ridge, and reached Ulassutai on July 25. A survey was made throughout the route, and collections of birds and plants, especially alpine, were obtained. From Ulassutai M. Potanin intended to visit the almost unknown tracts at the sources of the Yenissei, Lake Kosogol, and thence to return by way of Lake Ubsa-nor to Biysk.

THE *Allgemeine schweizerische Gesellschaft für die Gesamten Naturwissenschaften*, of Zurich, has just published the second part of its volume for 1877, which contains but one, but a very elaborate treatise, on the spiders of Switzerland. The paper occupies no less than 320 quarto pages, and is accompanied by six well-drawn plates. The author is Prof. Hermann Lebert, and his work is a most valuable addition to zoological science.

A NEW ethnographical museum is about to be erected in Paris, and is to contain everything that is of any value in relation to the science of ethnography.

THE new volume of the *Popular Science Review* commences well. The January number has several good articles, that on "The Old and the New Chemistry" being specially interesting.

IN reference to our note last week on the specimens in the Westminster Aquarium, it is the specimen of *Menobranchius lateralis* which is said to be the first shown in England.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus*) from India, presented by Mr. F. Wood; a Striped Hyæna (*Hyæna striata*) from Arabia, presented by Capt. F. Cotton; a Red and Yellow Macaw (*Ara chloroptera*) from Cartagena, presented by Capt. King; a Naked-eared Deer (*Cervus gymnotis*) from Venezuela, presented by Mr. Cyril Graham; a Robben Island Snake (*Coronella phocærum*) from South Africa, presented by Messrs. Rice and Jamrach; a Macaque Monkey (*Macacus cynomolgus*) from India, deposited.

## AMERICAN SCIENCE

IN the December number of the *American Journal of Science and Art*, Mr. Holden collates various observations, by the Herschels and others, on the trifold nebula M 20, discovered by Messier, June 5, 1764, who, however, gives no details concerning it. The result of the inquiry is to show (1) that from 1784, when Sir William Herschel first described it somewhat in detail, to 1833, the remarkable triple star observed in the nebula, was centrally situated between the three nebulosities; (2) from 1839 to 1877 the triple star was not centrally situated, but involved in one of the nebulosities (A). The idea that the triple star has a large proper motion being thought improbable, it is concluded that the nebula has undergone marked changes of position, or brilliancy, or both, during the period 1784 to 1877. The conjecture was thrown out by Sir John Herschel, that "perhaps this singular object has a proper motion."

In a recent survey of the Connecticut Valley, one of the most interesting features is the discovery of a massive gravel ridge, often nearly covered by the alluvium of the highest terraces extending from Lyme, N. H., to Windsor, Vt. (twenty-four miles). It occupies nearly the middle of the valley, and resembles the gravel ridges that have been known under the various name of *kames*, in Scotland, *eskers* in Ireland, and *asar* in Sweden. The theory of the origin of the kames, commonly accepted, is that they were heaped up through the agency of marine currents, during a submergence of the land. It seemed impossible to account thus for the kames in the Connecticut and Merimack valleys (one is found in the latter also), which, being bordered on both sides by high hills, would have been long estuaries open to the sea only at their mouths, and therefore not affected by oceanic currents. The date of their formation is known to be between the period when the ice-sheet moved over the land, and that closely following, in which the more recent and modified drift was deposited in the open valley from the floods that were supplied by the melting ice; and Mr. Warren Upham, who describes these kames, is thus led to attribute their formation to the action of the glacial rivers, which flowed in channels on the surface of the ice-sheet; the kames having been formed at or near their mouths, extending along their valleys, as fast as the ice front retreated.

Among many important discoveries made last summer by the United States Fish Commission are those of two new species of fishes, named respectively *Macrurus bairdii* and *Lycodes verrillii*. Particulars of these and of a number of other unusual forms are communicated by Messrs. Goode and Bean.

The Museum of Yale College has recently received the greater portion of the skeleton of a huge reptile which proves to be one of the most remarkable animals yet discovered. It was found by Prof. Lakes and Engineer Beckwith in upper Jurassic beds in Colorado on the eastern flank of the Rocky Mountains. The present species (*Stegosaurus armatus*) was probably thirty feet long, and moved mainly by swimming. Some of the teeth preserved have compressed crowns and are inserted in sockets (one is 112 mm. long, greatest diameter of crown, 24 mm.), others are cylindrical and are placed in rows, either in thin plates of imperfect bone or in cartilage (the latter may prove to be dermal spines). The body was protected by large bony dermal plates (one of these was over three feet in length).

Prof. Marsh also contributes a notice of some new Dinosaurian reptiles from the Jurassic formation.

The employment of chromic acid in various volumetric determinations is recommended by Mr. Hinman, who gives examples of his mode of procedure.

We learn from the *New York Tribune* that the last earthquake in the West was supposed to have radiated from a locality in Nebraska that has been popularly regarded as the site of a volcano. Prof. Samuel Aughey, of the Nebraska State University, has recently made an examination of the ground. The seat of disturbance is on the banks of the Missouri, in Dixon County, about thirty-six miles from Sioux City. A bluff, about 1,100 feet long and 160 feet high, sloping at an angle of  $60^{\circ}$  to  $80^{\circ}$  toward the river, is at present the place where the phenomena are most exhibited, but other bluffs at a few miles' distance have been similarly affected. On the bluff sounds were heard proceeding from the interior, especially on placing the ear to the ground. Flames sometimes broke forth, occasionally at night. Steam escaped from crevices. On digging into the bluff, intense heat stopped the work after proceeding a few feet. Selenite, alum, and magnesian sulphate in crystals were abundant. Prof. Aughey regards these features as not volcanic in the usual sense